Abstract

Alzheimer's is a type of dementia that occurs especially in elderly. Unfortunately, there is no treatment for cure, and the cost for treatments the symptoms are very high. Thus, this is the challenge to develop dietary supplement product from local plants and present the pharmacological profiles in the term of anti-Alzheimer's activities. Perilla (*Perilla frutescens* (Linn.) Britton) and tea plant (*Camellia sinensis* var. assamica) are the local plants of northern-part of Thailand which were reported the anti-Alzheimer's activities. The aims of this study were to study the anti-Alzheimer's activities of perilla oil and tea leaves extract, and develop dietary supplement prototype. Perilla oil was compressed by cold compressor machine while tea leaves were extracted by maceration method with 95 % ethanol. The extract yields of perilla oil and tea leaves extract were 31.67 and 4.98 %, respectively. The result showed that perilla oil consisted of linolenic acid (57.07%) and tea leaves extract consisted of EGCG (0.43%). Anti-acetylcholinesterase (AChE), anti-oxidant, and anti-amyloid aggregation activities of perilla oil and tea leaves extract were investigated in this study. Our results indicated that perilla oil and tea leaves extracts were effective in preventing the aggregation of Aβ, with IC_{50} were 6.7 μg/ml and 0.16 mg/ml, respectively. Tea leaves extracts and perilla oil were effective in anti-AChE activity with 43.80 μg/ml and 10.88 mg/ml of IC_{50}, respectively. For anti-oxidant activity, IC_{50} of tea leaves extracts was 0.48 g/ml, while the IC_{50} of perilla oil was 11.75 g/ml. For providing safety profiles, MTS assay was employed to study cell viability activity. Perilla oil and tea leaves extracts were not cytotoxic in normal PBMC cells. Our studies indicated that, tea leaves extracts and perilla oil presented anti-Alzheimer's activities via anti- AChE, anti-oxidant, and anti-amyloid aggregation mechanisms. From our finding, perilla oil and tea leaves extracts were suitable to develop dietary supplement prototype to improve memory function. In this study, we selected jelly to be as the dosage form of dietary supplement containing tea leave extract and perilla. Varies ratio of gelling agents (carrageenan and konjac) and concentration of gelling agent were studied to evaluate the optimal dietary supplement formulation which presented the good strength and elastic profiles for jelly at 3: 7 (1% w/v) and 1: 1 (0.8 % w/v) in the ratio of konjac: carrageenan. The formulated dietary supplement containing tea leave extract and perillia oil were milk tea brown color which presented the stable property all over period for long term study and good sensory evaluation from volunteers suggesting that developed

jellies could be as the interesting prototypes of dietary supplement which active ingredients showed anti Alzheimers' properties.